FIG. 1

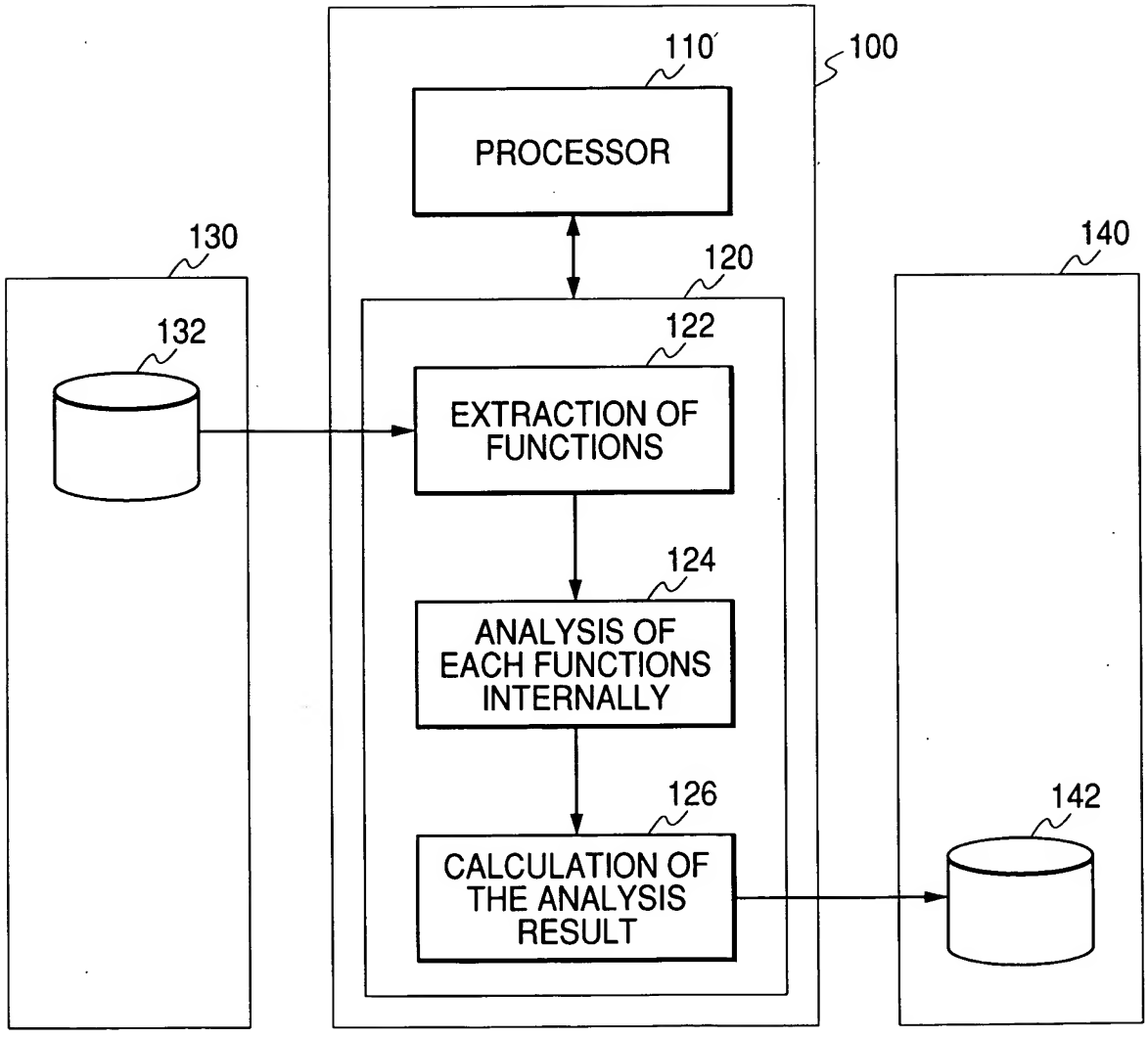


FIG. 2

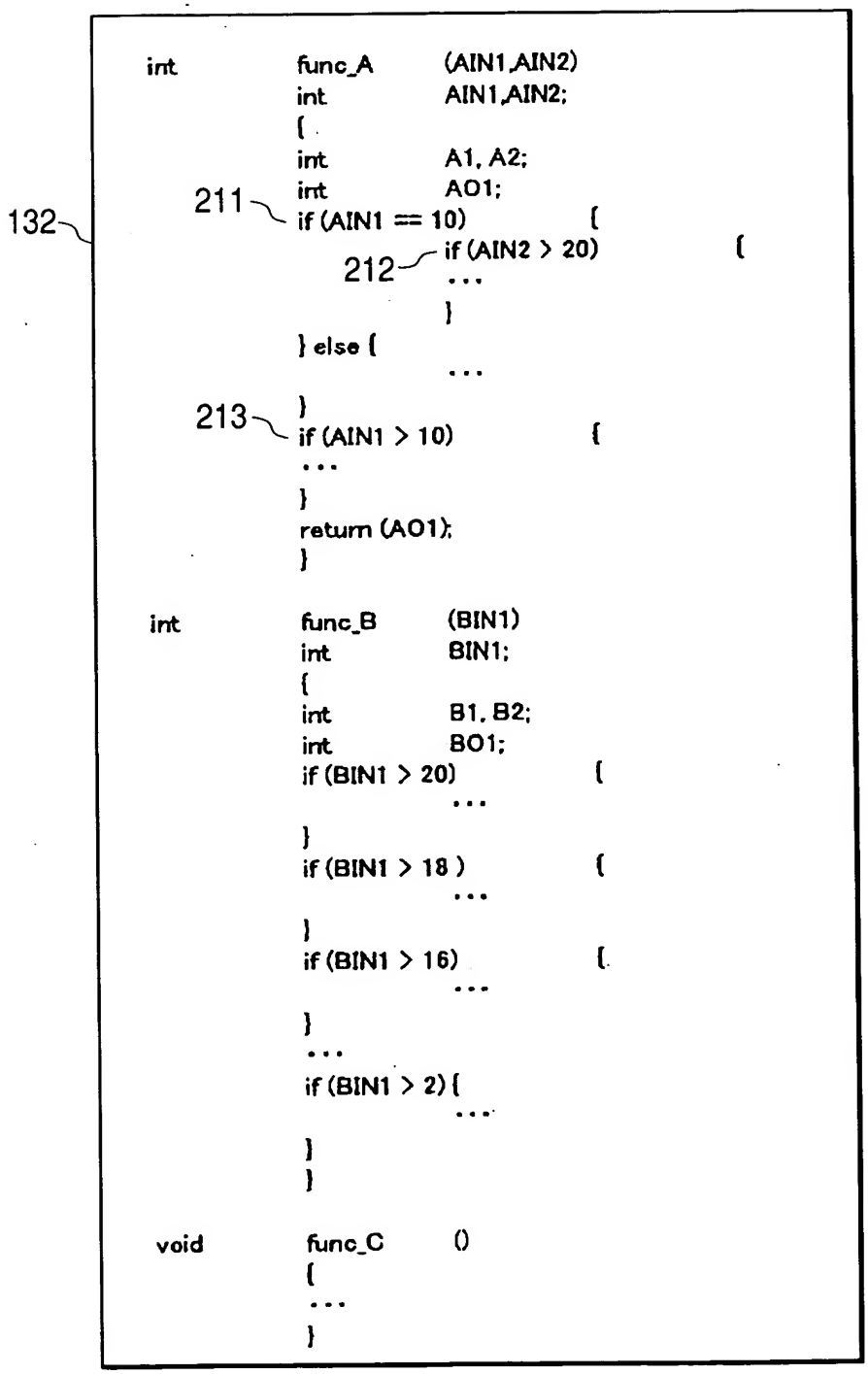

132
211
212
213
int func_A (AIN1,AIN2)
int AIN1,AIN2;
{
int A1, A2;
int AO1;
if (AIN1 == 10) {
if (AIN2 > 20) {
...
}
} else {
...
}
if (AIN1 > 10) {
...
}
return (AO1);
}
int func_B (BIN1)
int BIN1;
{
int B1, B2;
int BO1;
if (BIN1 > 20) {
...
}
if (BIN1 > 18 ) {
...
}
if (BIN1 > 16) {
...
}
...
if (BIN1 > 2) {
...
}
}
void func_C ()
{
...
}

FIG. 3

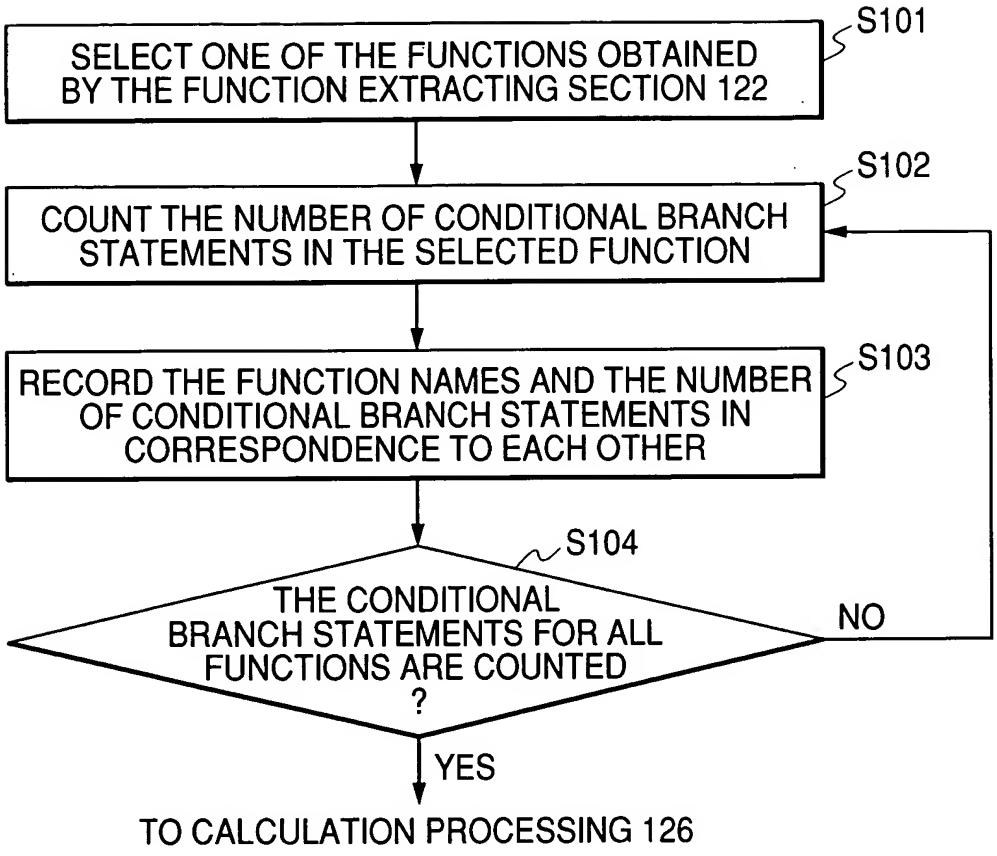



FIG. 4

| FUNCTION NAME | NUMBER OF CONDITIONAL BRANCH STATEMENTS |
|---|---|
| func_A | 3 |
| func_B | 10 |
| func_C | 0 |

FIG. 5

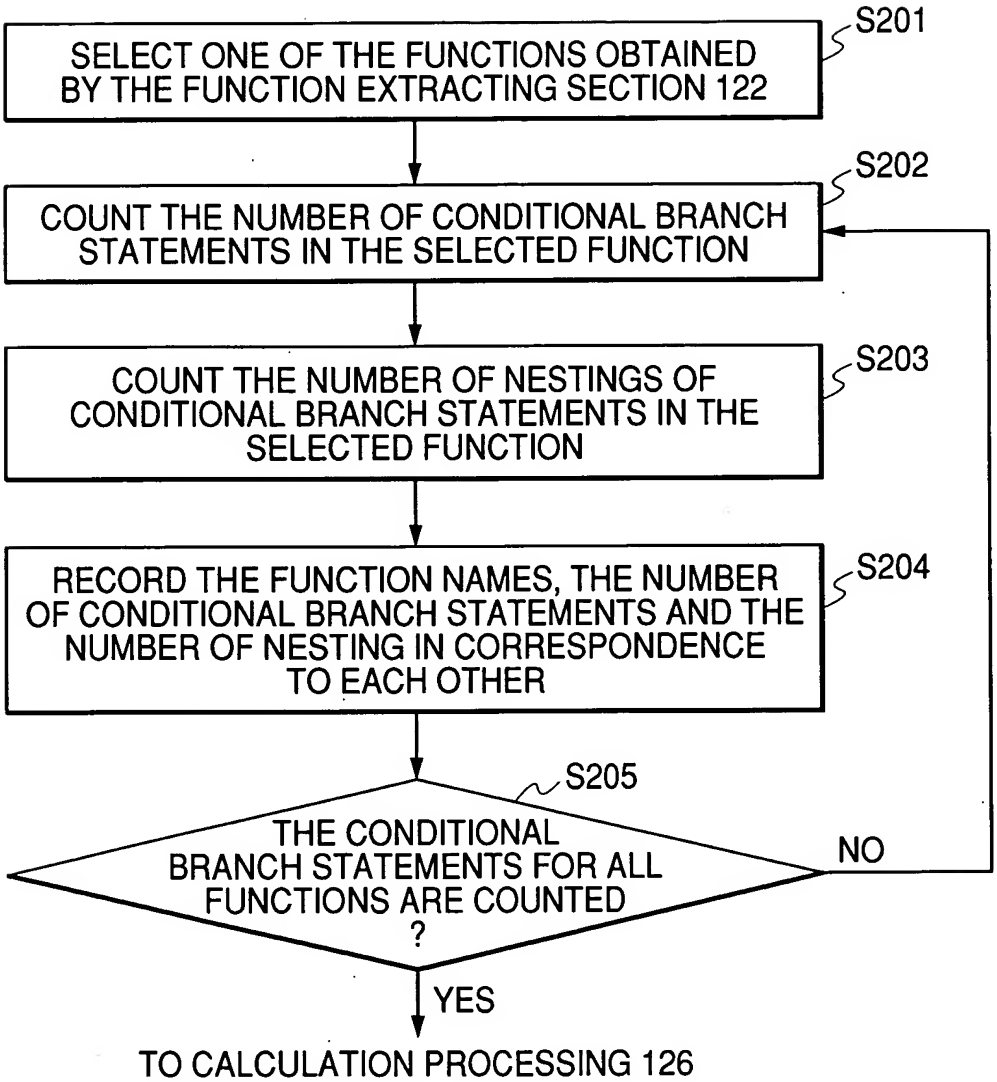

SELECT ONE OF THE FUNCTIONS OBTAINED BY THE FUNCTION EXTRACTING SECTION 122
S201
COUNT THE NUMBER OF CONDITIONAL BRANCH STATEMENTS IN THE SELECTED FUNCTION
S202
COUNT THE NUMBER OF NESTINGS OF CONDITIONAL BRANCH STATEMENTS IN THE SELECTED FUNCTION
S203
RECORD THE FUNCTION NAMES, THE NUMBER OF CONDITIONAL BRANCH STATEMENTS AND THE NUMBER OF NESTING IN CORRESPONDENCE TO EACH OTHER
S204
S205
THE CONDITIONAL BRANCH STATEMENTS FOR ALL FUNCTIONS ARE COUNTED ?
NO
YES
TO CALCULATION PROCESSING 126

FIG. 6

| FUNCTION NAME | CONDITIONAL BRANCH STATEMENT | | |
|---|---|---|---|
| | NUMBER | NUMBER OF NESTINGS | |
| | | NUMBER OF NESTING STAGE | NUMBER OF CORRESPONDING CONDITIONAL BRANCH STATEMENTS |
| func_A | 3 | 0 | 2 |
| | | 1 | 1 |
| func_B | 10 | 0 | 10 |
| func_C | 0 | 0 | 0 |

FIG. 7

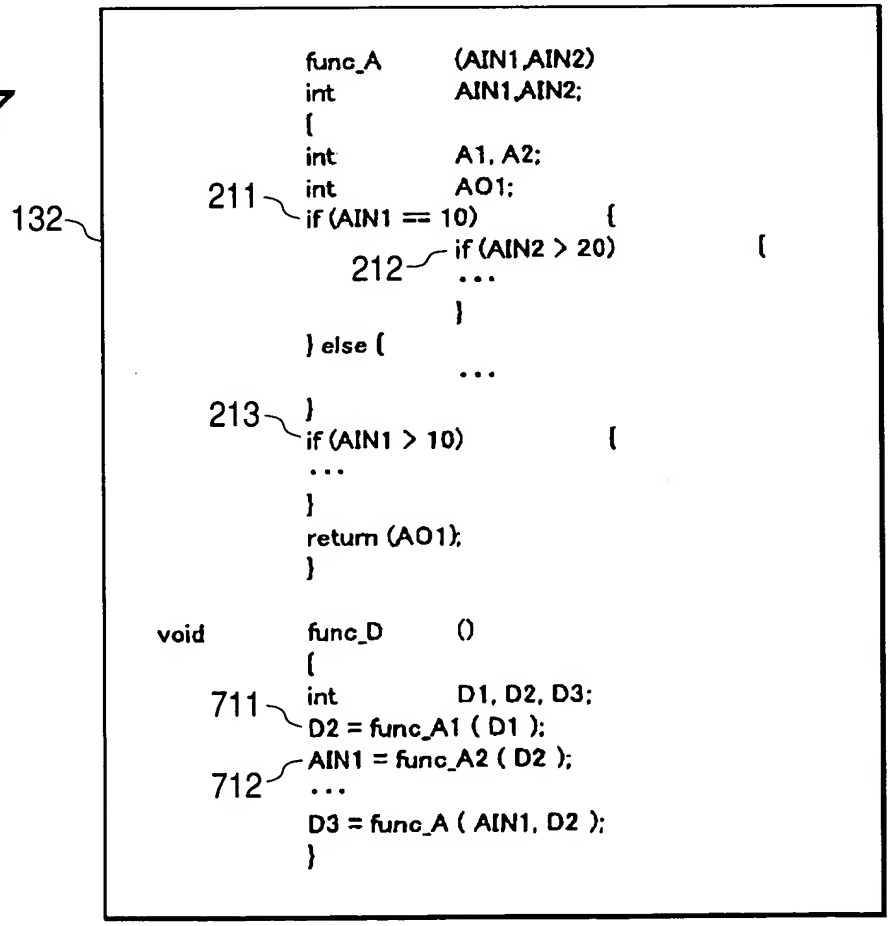


FIG. 8

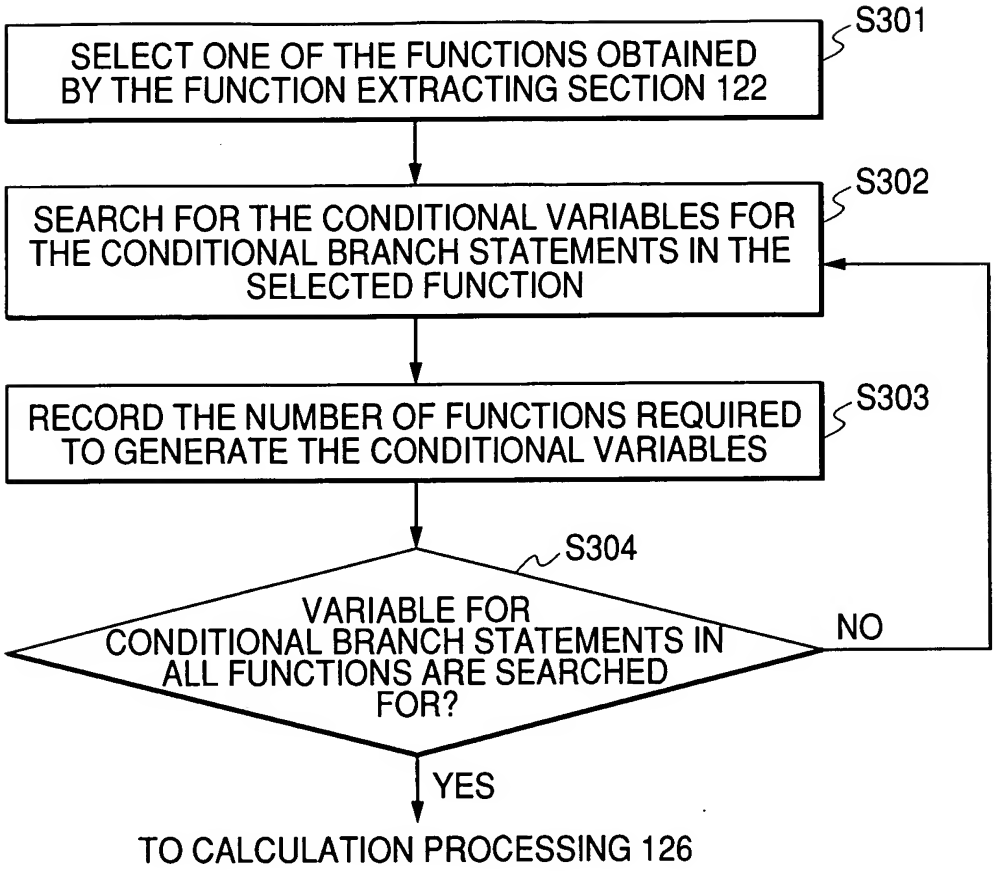



FIG. 9

| FUNCTION NAME | CONDITIONAL BRANCH STATEMENT | | |
|---|---|---|---|
| | NUMBER | VARIABLE GENERATION | |
| | | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| func_A | 3 | 2 | 1 |
| | | 0 | 1 |
| func_D | 0 | 0 | 0 |

FIG. 10

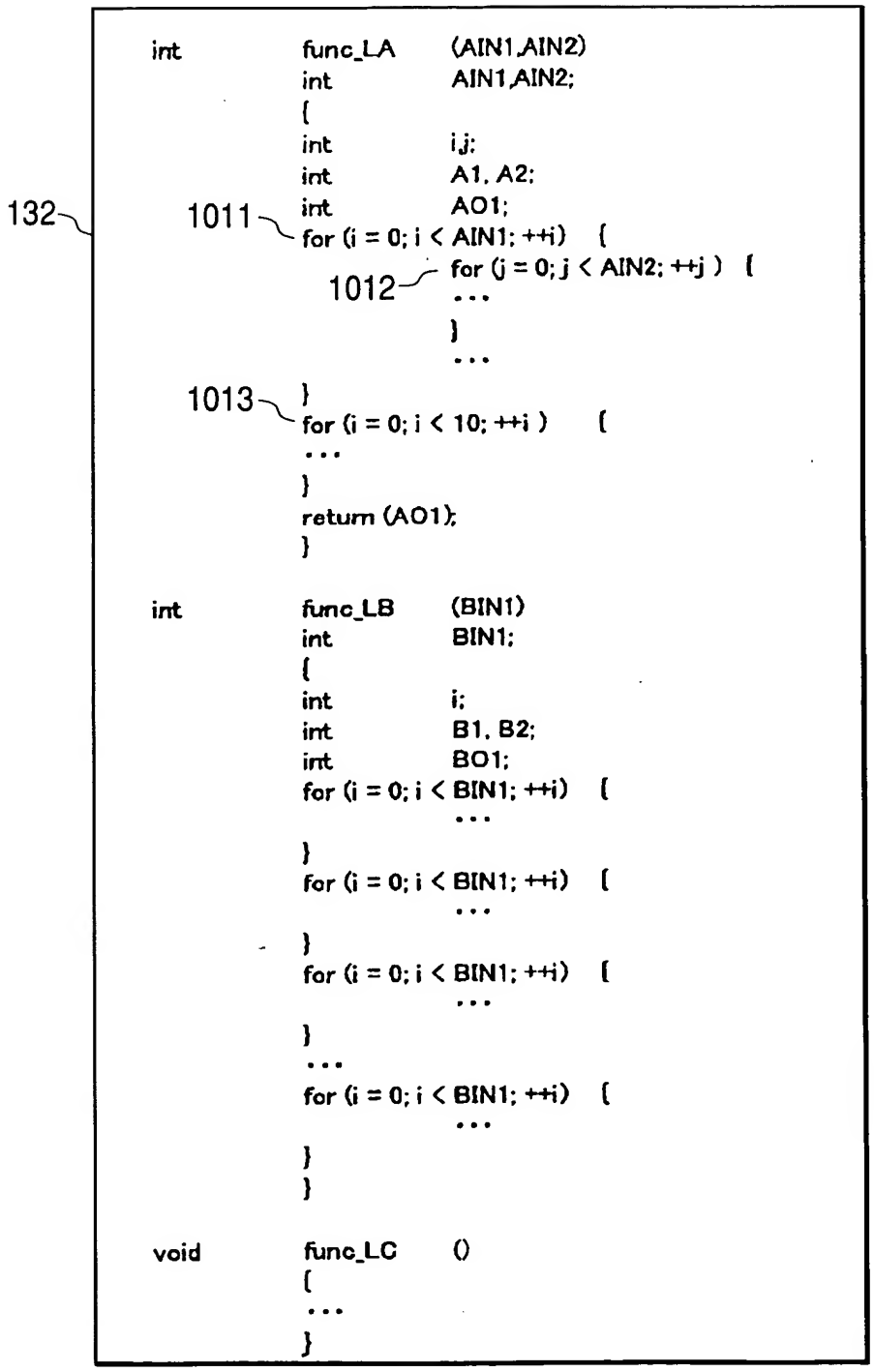

132
1011
1012
1013
int func_LA (AIN1,AIN2)
int AIN1,AIN2;
{
int i,j;
int A1, A2;
int AO1;
for (i = 0; i < AIN1; ++i) {
for (j = 0; j < AIN2; ++j ) {
...
}
...
}
for (i = 0; i < 10; ++i ) {
...
}
return (AO1);
}
int func_LB (BIN1)
int BIN1;
{
int i;
int B1, B2;
int BO1;
for (i = 0; i < BIN1; ++i) {
...
}
for (i = 0; i < BIN1; ++i) {
...
}
for (i = 0; i < BIN1; ++i) {
...
}
...
for (i = 0; i < BIN1; ++i) {
...
}
}
void func_LC ()
{
...
}

FIG. 11

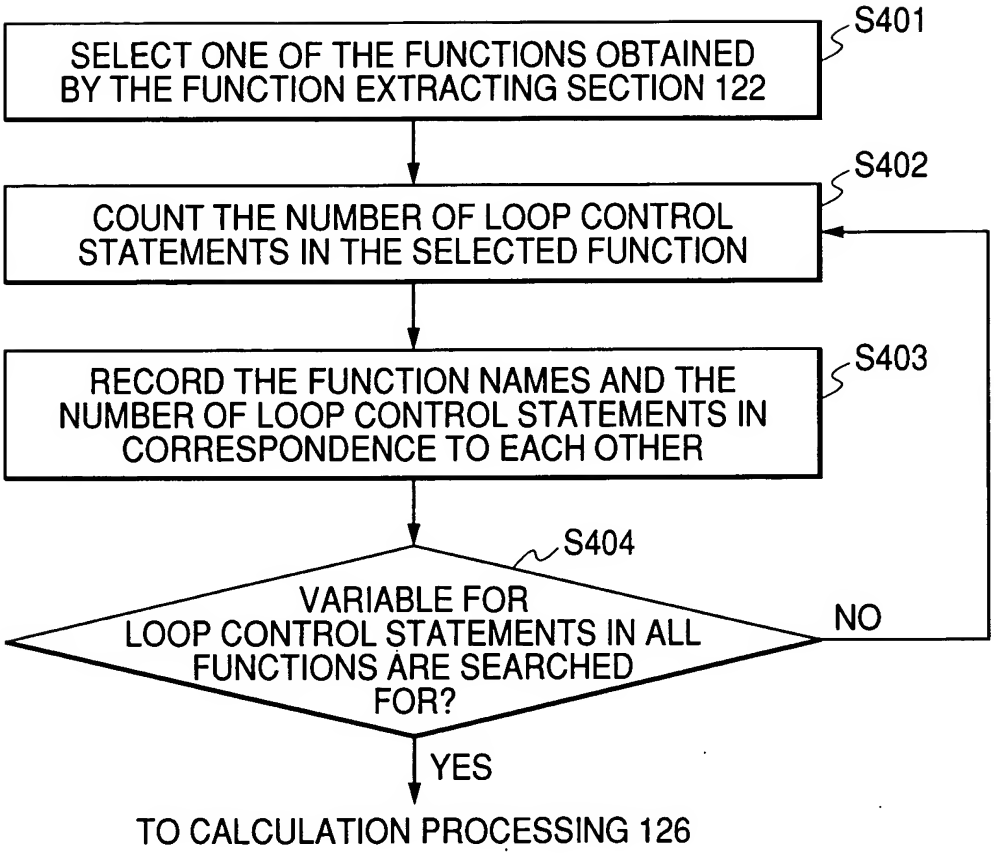



FIG. 12

| FUNCTION NAME | NUMBER OF LOOP CONTROL STATEMENTS |
|---|---|
| func_LA | 3 |
| func_LB | 10 |
| func_LC | 0 |

FIG. 13

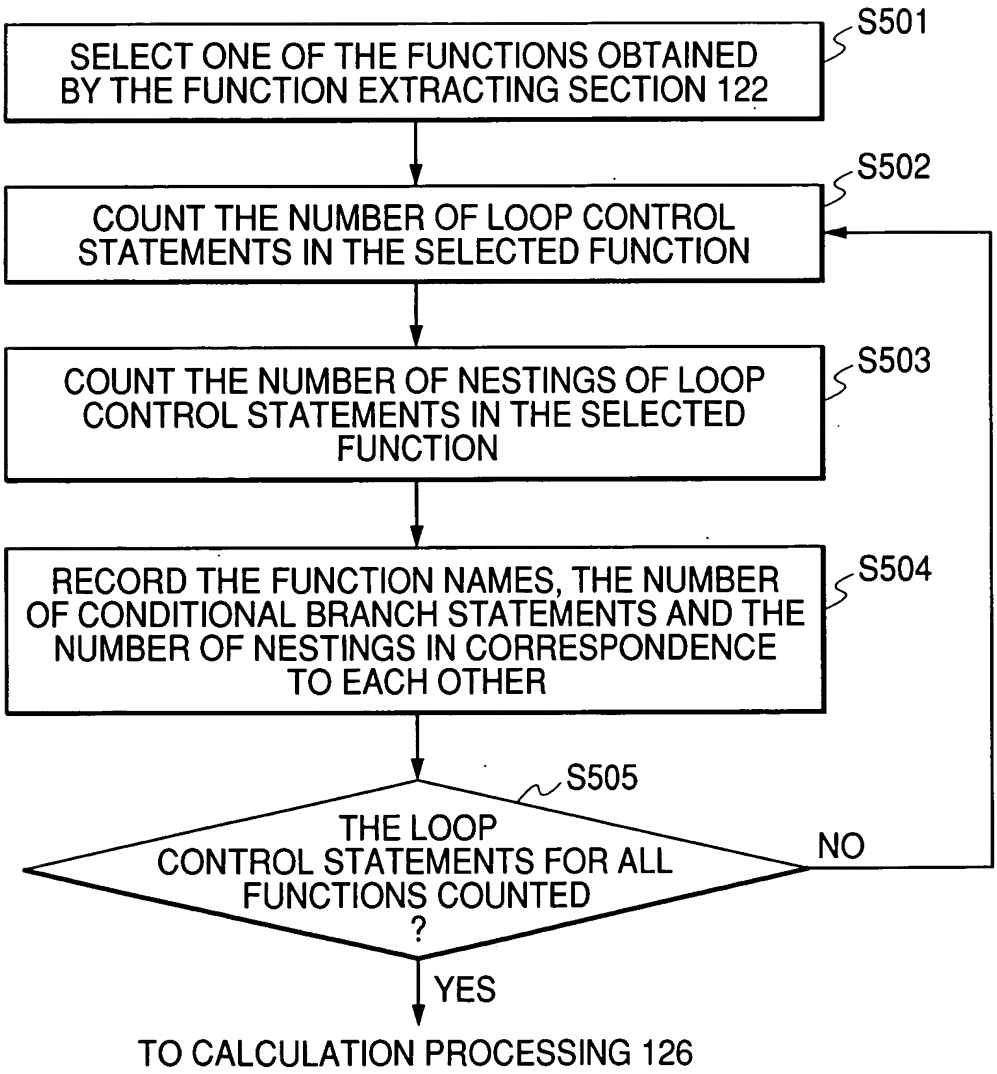

SELECT ONE OF THE FUNCTIONS OBTAINED BY THE FUNCTION EXTRACTING SECTION 122
S501
COUNT THE NUMBER OF LOOP CONTROL STATEMENTS IN THE SELECTED FUNCTION
S502
COUNT THE NUMBER OF NESTINGS OF LOOP CONTROL STATEMENTS IN THE SELECTED FUNCTION
S503
RECORD THE FUNCTION NAMES, THE NUMBER OF CONDITIONAL BRANCH STATEMENTS AND THE NUMBER OF NESTINGS IN CORRESPONDENCE TO EACH OTHER
S504
S505
THE LOOP CONTROL STATEMENTS FOR ALL FUNCTIONS COUNTED ?
NO
YES
TO CALCULATION PROCESSING 126

FIG. 14

| FUNCTION NAME | LOOP CONTROL STATEMENT | | |
|---|---|---|---|
| | NUMBER | NUMBER OF NESTINGS | |
| | | NUMBER OF NESTING STAGE | NUMBER OF CORRESPONDING LOOP CONTROL STATEMENTS |
| func_LA | 3 | 0 | 2 |
| | | 1 | 1 |
| func_LB | 10 | 0 | 10 |
| func_LC | 0 | 0 | 0 |

FIG. 15

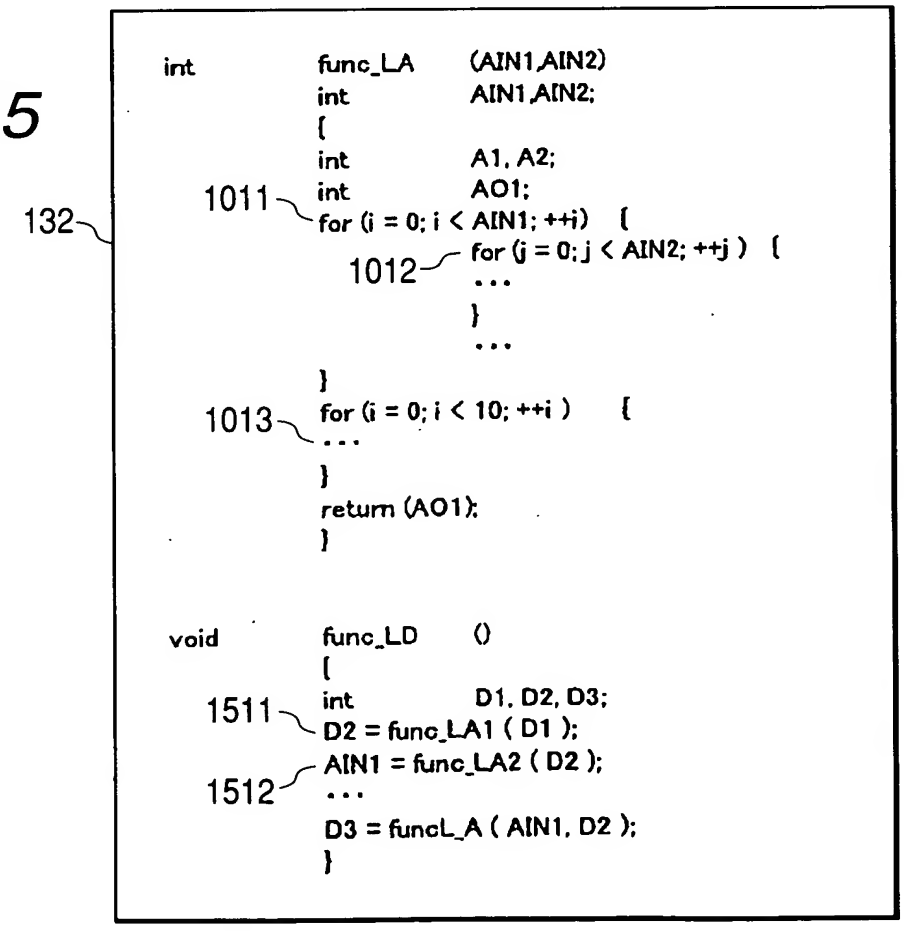


FIG. 16

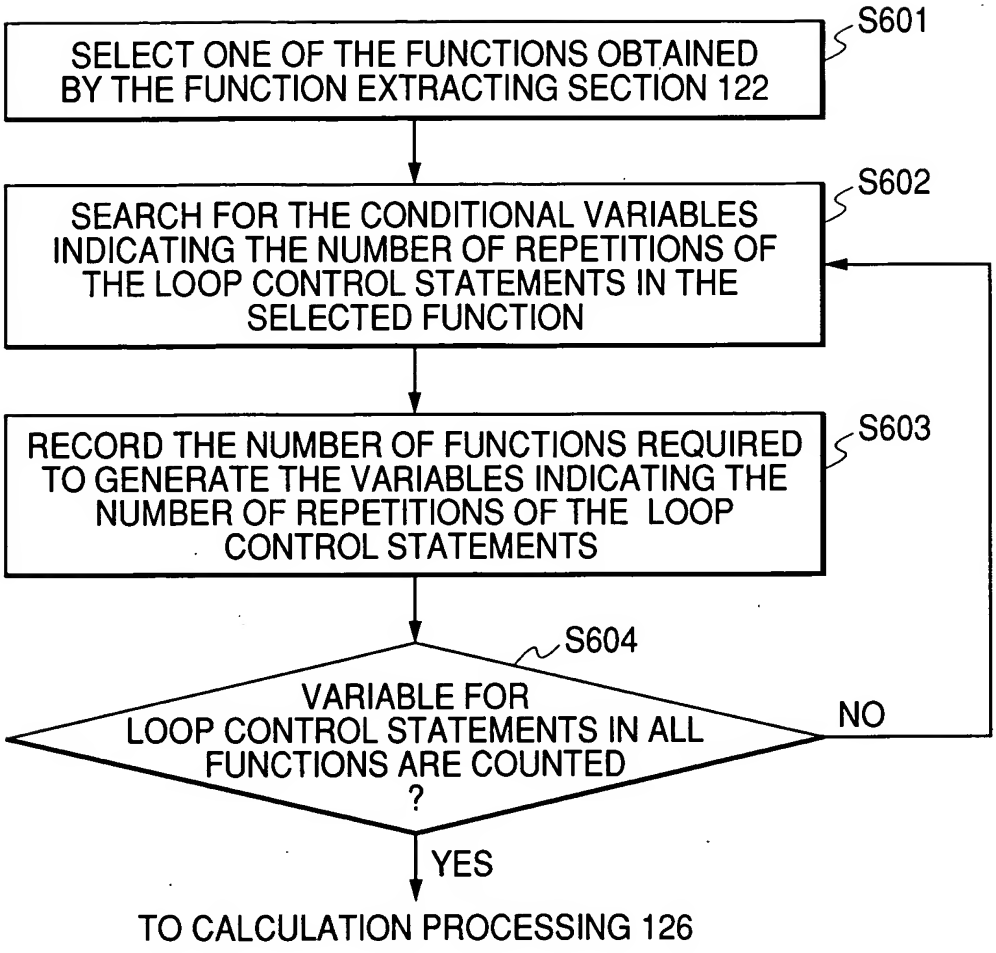
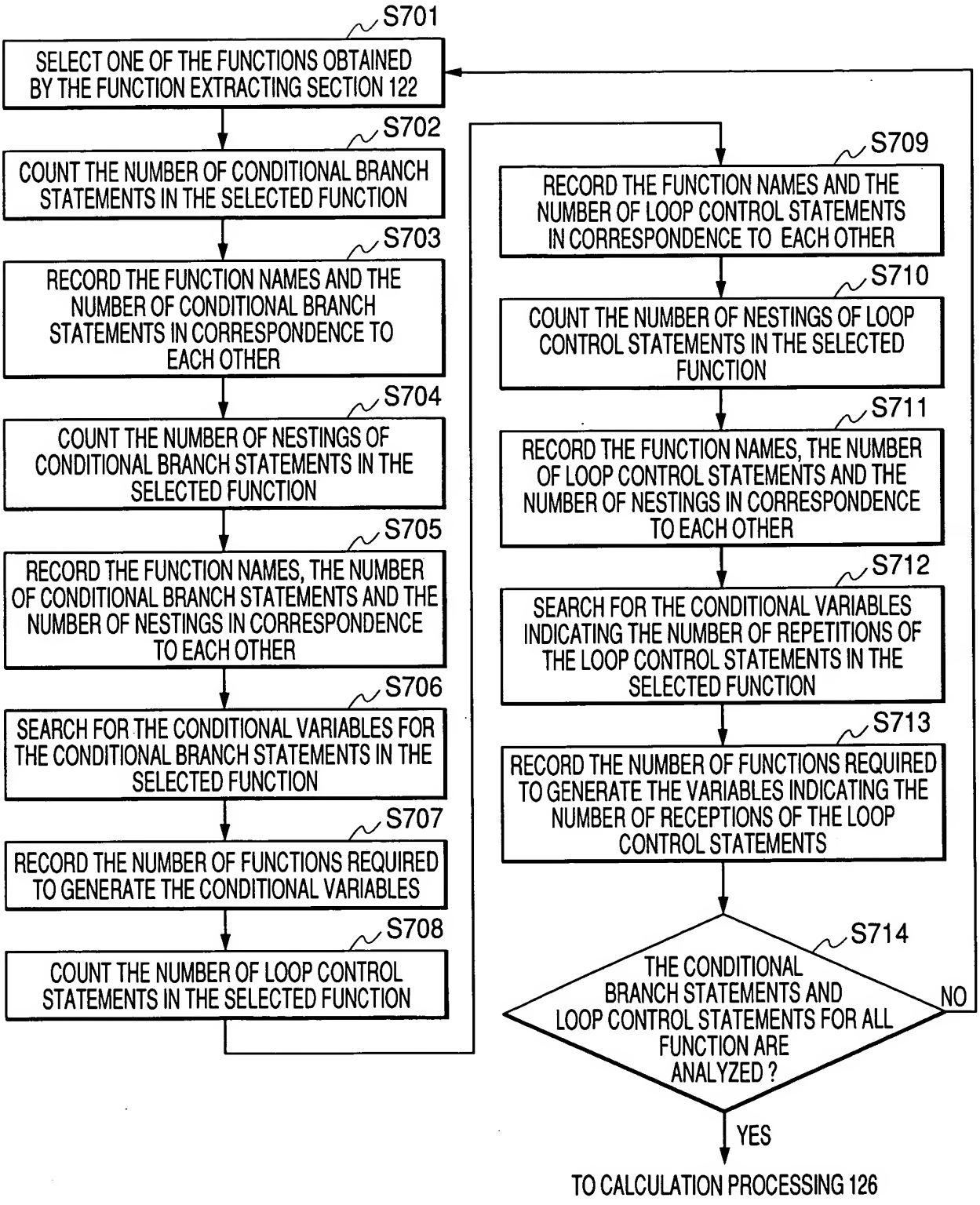



FIG. 17

| FUNCTION NAME | LOOP CONTROL STATEMENT | | |
|---|---|---|---|
| | NUMBER | VARIABLE GENERATION FOR THE NUMBER OF REPETITIONS | |
| | | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| func_LA | 3 | 2 | 1 |
| | | 0 | 1 |
| func_LD | 0 | 0 | 0 |

FIG. 18


S701
SELECT ONE OF THE FUNCTIONS OBTAINED BY THE FUNCTION EXTRACTING SECTION 122
S702
COUNT THE NUMBER OF CONDITIONAL BRANCH STATEMENTS IN THE SELECTED FUNCTION
S703
RECORD THE FUNCTION NAMES AND THE NUMBER OF CONDITIONAL BRANCH STATEMENTS IN CORRESPONDENCE TO EACH OTHER
S704
COUNT THE NUMBER OF NESTINGS OF CONDITIONAL BRANCH STATEMENTS IN THE SELECTED FUNCTION
S705
RECORD THE FUNCTION NAMES, THE NUMBER OF CONDITIONAL BRANCH STATEMENTS AND THE NUMBER OF NESTINGS IN CORRESPONDENCE TO EACH OTHER
S706
SEARCH FOR THE CONDITIONAL VARIABLES FOR THE CONDITIONAL BRANCH STATEMENTS IN THE SELECTED FUNCTION
S707
RECORD THE NUMBER OF FUNCTIONS REQUIRED TO GENERATE THE CONDITIONAL VARIABLES
S708
COUNT THE NUMBER OF LOOP CONTROL STATEMENTS IN THE SELECTED FUNCTION
S709
RECORD THE FUNCTION NAMES AND THE NUMBER OF LOOP CONTROL STATEMENTS IN CORRESPONDENCE TO EACH OTHER
S710
COUNT THE NUMBER OF NESTINGS OF LOOP CONTROL STATEMENTS IN THE SELECTED FUNCTION
S711
RECORD THE FUNCTION NAMES, THE NUMBER OF LOOP CONTROL STATEMENTS AND THE NUMBER OF NESTINGS IN CORRESPONDENCE TO EACH OTHER
S712
SEARCH FOR THE CONDITIONAL VARIABLES INDICATING THE NUMBER OF REPETITIONS OF THE LOOP CONTROL STATEMENTS IN THE SELECTED FUNCTION
S713
RECORD THE NUMBER OF FUNCTIONS REQUIRED TO GENERATE THE VARIABLES INDICATING THE NUMBER OF RECEPTIONS OF THE LOOP CONTROL STATEMENTS
S714
THE CONDITIONAL BRANCH STATEMENTS AND LOOP CONTROL STATEMENTS FOR ALL FUNCTION ARE ANALYZED ?
NO
YES
TO CALCULATION PROCESSING 126

# FIG. 19

| FUNCTION NAME | CONDITIONAL BRANCH STATEMENT | | | | | LOOP CONTROL STATEMENT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NUMBER | NUMBER OF NESTINGS | | VARIABLE GENERATION | | NUMBER | NUMBER OF NESTINGS | | GENERATION OF VARIABLES FOR THE NUMBER OF REPETITIONS | |
| | | NUMBER OF NESTING STAGES | NUMBER OF STAGES NUMBER OF CORRESPONDING CONDITIONAL BRANCH STATEMENTS | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES | | NUMBER OF NESTING STAGES | NUMBER OF CORRESPONDING LOOP CONTROL STATEMENTS | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| func_A | 3 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | 1 | 1 | 0 | 1 | | | | | |
| func_B | 10 | 0 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| func_C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| func_D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| func_LA | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 2 | 1 |
| | | | | | | | 1 | 1 | 0 | 1 |
| func_LB | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 0 | 1 |
| func_LC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| func_LD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

FIG. 20

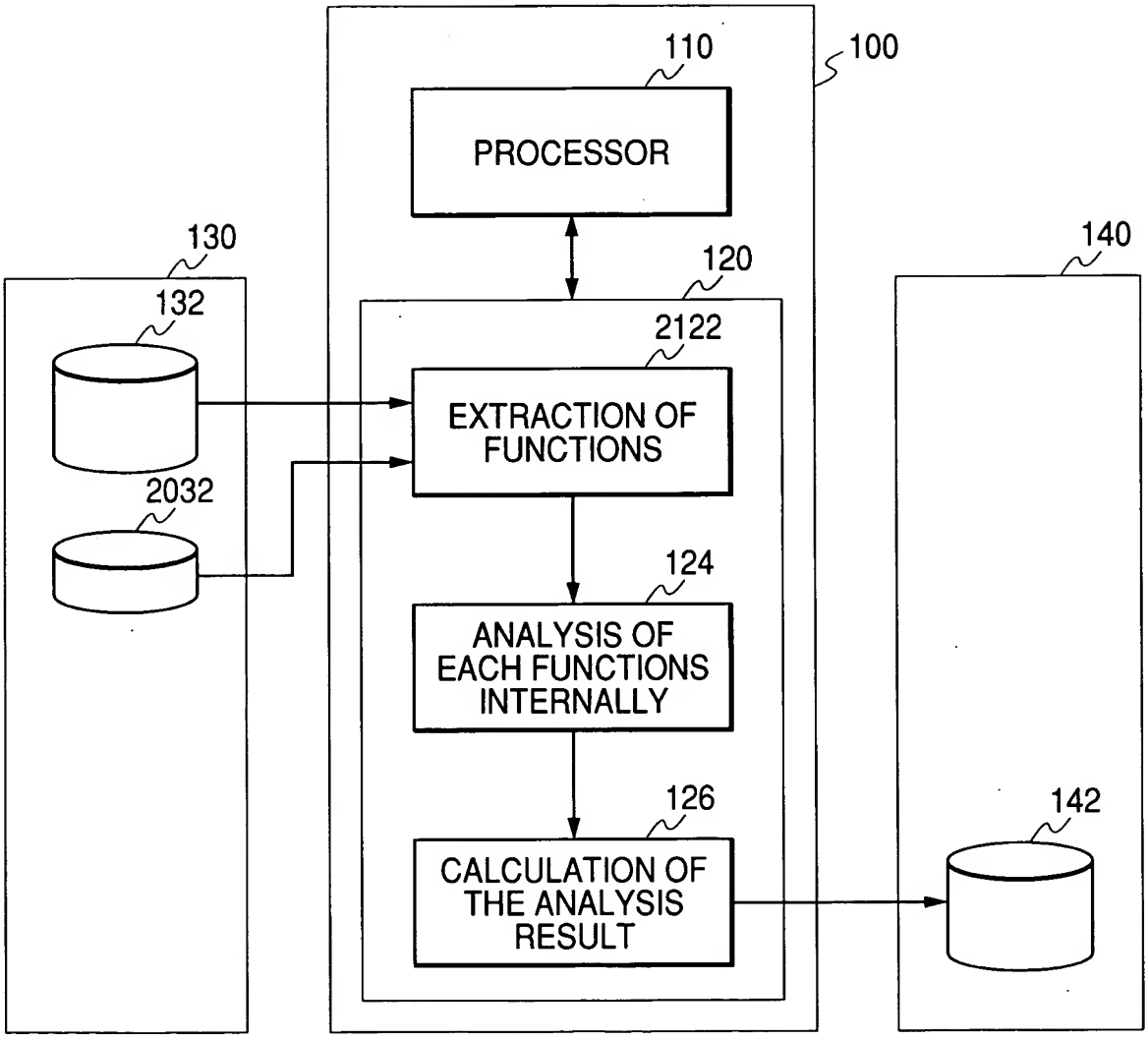

100
110
PROCESSOR
120
130
132
2032
2122
EXTRACTION OF FUNCTIONS
124
ANALYSIS OF EACH FUNCTIONS INTERNALLY
126
CALCULATION OF THE ANALYSIS RESULT
140
142

FIG. 21

| FUNCTION NAME | CONDITIONAL BRANCH STATEMENT | | |
|---|---|---|---|
| | NUMBER | VARIABLE GENERATION | |
| | | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| func_A+func_D | 3 | 2 | 1 |
| | | 0 | 1 |

FIG. 22

| FUNCTION NAME | LOOP CONTROL STATEMENT | | |
|---|---|---|---|
| | NUMBER | GENERATION OF VARIABLES FOR THE NUMBER OF REPETITIONS | |
| | | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| func_LA+func_LD | 3 | 2 | 1 |
| | | 0 | 1 |

FIG. 23

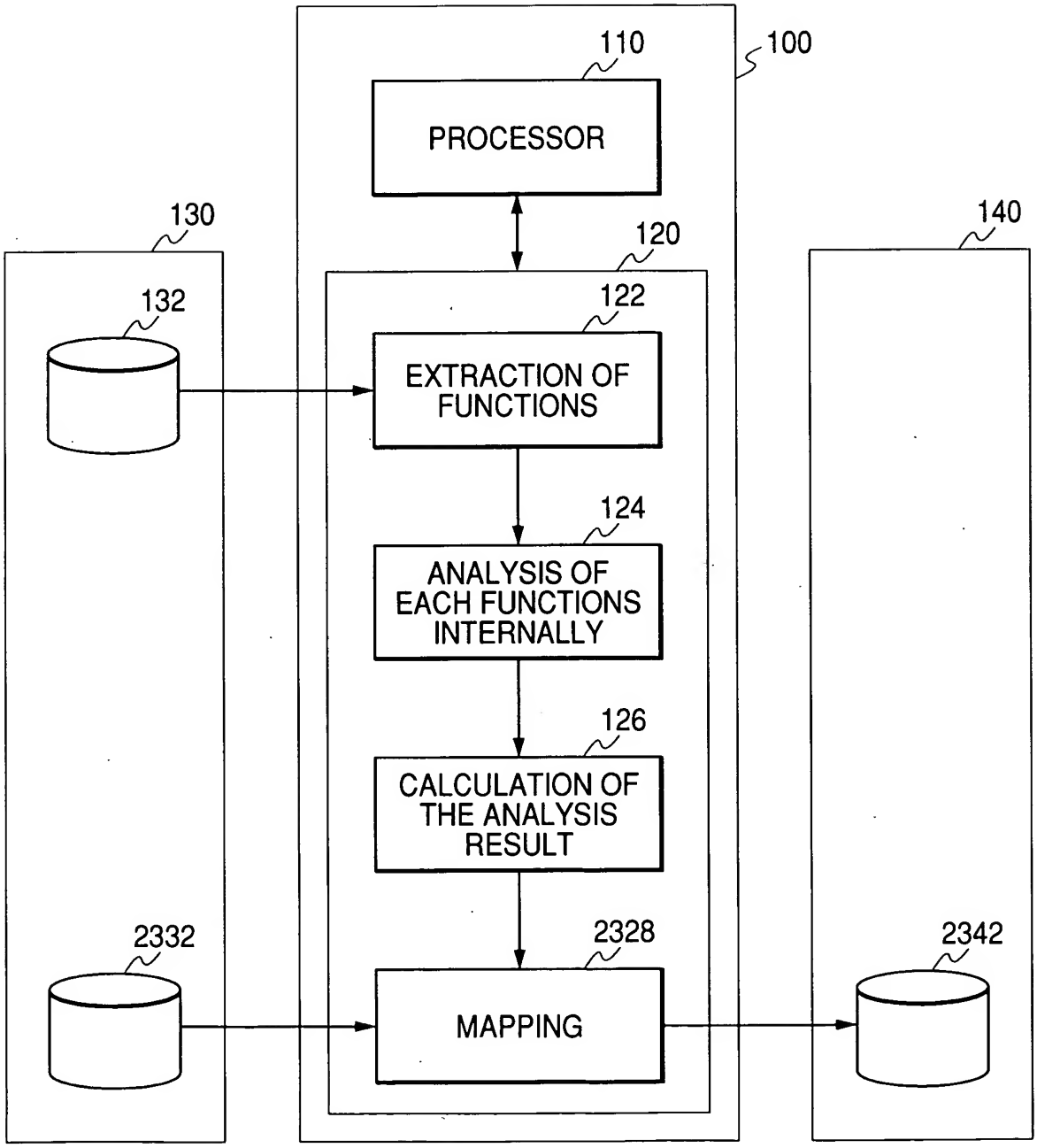

100
110
PROCESSOR
130
120
140
132
122
EXTRACTION OF FUNCTIONS
124
ANALYSIS OF EACH FUNCTIONS INTERNALLY
126
CALCULATION OF THE ANALYSIS RESULT
2332
2328
2342
MAPPING

FIG. 24

| PROCESSING UNIT | PREFERABLE NUMBER OF CONDITIONAL BRANCH STATEMENTS |
|---|---|
| CPU | 10 OR MORE |
| DSP | 3 TO 9 |
| DEDICATED LOGIC | 2 OR LESS |

FIG. 25

| FUNCTION NAME | APPROPRIATE PROCESSING UNIT |
|---|---|
| func_A | DSP |
| func_B | CPU |
| func_C | DEDICATED LOGIC |

FIG. 26

| PROCESSING UNIT | PREFERABLE NUMBER OF LOOP CONTROL STATEMENTS |
|---|---|
| CPU | 3 TO 9 |
| DSP | 10 OR MORE |
| DEDICATED LOGIC | 2 OR LESS |

FIG. 27

| FUNCTION NAME | APPROPRIATE PROCESSING UNIT |
|---|---|
| func_LA | CPU |
| func_LB | DSP |
| func_LC | DEDICATED LOGIC |

# FIG. 28

| FUNCTION NAME | APPROPRIATE CONDITIONAL BRANCH STATEMENT | | | | | APPROPRIATE LOOP CONTROL STATEMENT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NUMBER | NUMBER OF NESTINGS | | VARIABLE GENERATION | | NUMBER | NUMBER OF NESTINGS | | GENERATION OF VARIABLES FOR THE NUMBER OF REPETITIONS | |
| | | NUMBER OF NESTING STAGES | NUMBER OF CORRESPONDING CONDITIONAL BRANCH STATEMENTS | NUMBER OF CORRESPONDING CONDITIONAL BRANCH STATEMENTS | NUMBER OF VARIABLES | | NUMBER OF NESTING STAGES | NUMBER OF CORRESPONDING LOOP CONTROL STATEMENTS | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| CPU | 10 OR MORE | 0 | 1 OR MORE | 0 | 1 OR MORE | 3 TO 9 | 0 | 3 TO 9 | 0 | 3 TO 9 |
| | | 1 | 1 OR MORE | 1 | 1 OR MORE | | 1 | 0 | 1 | 0 |
| | | 2 OR MORE | 1 OR MORE | 2 OR MORE | 1 OR MORE | | 2 OR MORE | 0 | 2 OR MORE | 0 |
| DSP | 3 TO 9 | 0 | 3 TO 9 | 0 | 3 TO 9 | 10 OR MORE | 0 | 1 OR MORE | 0 | 2 OR LESS |
| | | 1 | 3 OR LESS | 1 | 3 OR LESS | | 1 | 1 OR MORE | 1 | 2 OR LESS |
| | | 2 OR MORE | 1 OR LESS | 2 OR MORE | 1 OR LESS | | 2 OR MORE | 1 OR MORE | 2 OR MORE | 2 OR LESS |
| DEDICATED LOGIC | 2 OR LESS | 0 | 3 OR LESS | 0 | 3 OR LESS | 3 OR LESS | 0 | 3 OR LESS | 0 | 3 OR LESS |

# FIG. 29

| FUNCTION NAME | APPROPRIATE CONDITIONAL BRANCH STATEMENT | | | | | APPROPRIATE LOOP CONTROL STATEMENT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NUMBER | NUMBER OF NESTINGS | | VARIABLE GENERATION | | NUMBER | NUMBER OF NESTINGS | | GENERATION OF VARIABLES FOR THE NUMBER OF REPETITIONS | |
| | | NUMBER OF NESTING STAGES | NUMBER OF CORRESPONDING CONDITIONAL BRANCH STATEMENTS | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES | | NUMBER OF NESTING STAGES | NUMBER OF CORRESPONDING LOOP CONTROL STATEMENTS | NUMBER OF FUNCTIONS REQUIRED FOR GENERATION | NUMBER OF VARIABLES |
| CPU | 10 OR MORE (K=8) | 0 (K=1) | 1 OR MORE | 0 (K=1) | 1 OR MORE | 3 TO 9 (K=6) | 0 (K=1) | 3 TO 9 | 0 (K=1) | 3 TO 9 |
| | | 1 (K=2) | 1 OR MORE | 1 (K=2) | 1 OR MORE | | 1 (K=1) | 0 | 1 (K=1) | 0 |
| | | 2 OR MORE (K=3) | 1 OR MORE | 2 OR MORE (K=3) | 1 OR MORE | | 2 OR MORE (K=1) | 0 | 2 OR MORE (K=1) | 0 |
| DSP | 3 TO 9 (K=8) | 0 (K=1) | 3 TO 9 | 0 (K=1) | 3 TO 9 | 10 OR MORE (K=6) | 0 (K=1) | 1 OR MORE | 0 (K=1) | 2 OR LESS |
| | | 1 (K=2) | 3 OR LESS | 1 (K=2) | 3 OR LESS | | 1 (K=2) | 1 OR MORE | 1 (K=2) | 2 OR LESS |
| | | 2 OR MORE (K=2) | 1 OR LESS | 2 OR MORE (K=2) | 1 OR LESS | | 2 OR MORE (K=3) | 1 OR MORE | 2 OR MORE (K=3) | 2 OR LESS |
| DEDICATED LOGIC | K=6 | 0 (K=1) | 3 OR LESS | 0 (K=1) | 3 OR LESS | 3 OR LESS (K=6) | 0 (K=1) | 3 OR LESS | 0 (K=2) | 3 OR LESS |

CPU = 3+4+2+2=11
DSP = 6+4+4+6=20
DEDICATED LOGIC = 1+1+6+2+2=12

FIG. 30

| FUNCTION NAME | APPROPRIATE PROCESSING UNIT |
|---|---|
| func_A | DSP |
| func_B | CPU |
| func_C | DEDICATED LOGIC |
| func_LA | CPU |
| func_LB | DSP |
| func_LC | DEDICATED LOGIC |